AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 182. NO. 17.
WHOLE NO. 3817

NEW YORK, SATURDAY, APRIL 25, 1925

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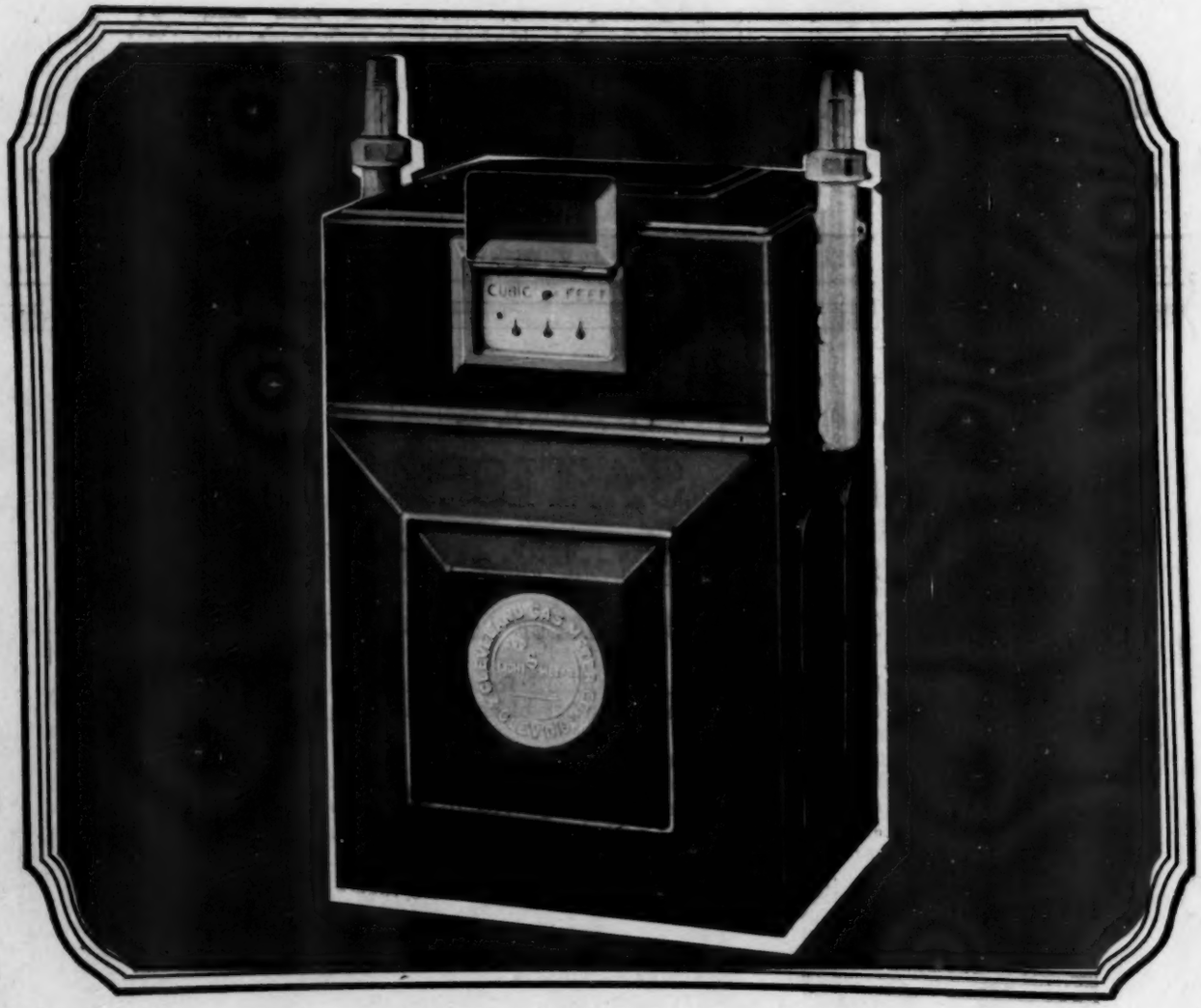

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American Gas Journal

SIXTY-SIXTH YEAR

Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. & Treas. C. S. MYERS, Vice-Pres. A. M. GLEASON, Sec'y.

STANTON G. KRAKE, Managing Editor ISMAR GINSBERG, Editor

"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

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Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL, April 25, 1925. Vol. 122. No. 17.
Published weekly by American Gas Light Journal, Inc., New York, N. Y.
Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

AMERICAN
GAS JOURNAL

Vol. 122. No. 17 NEW YORK, APRIL 25, 1925 Whole No. 3517

Fuel of the Future. What Shall It Be?

XX. Heat treatment of metals—Hardening of hack saw blades

Ismar Ginsberg

A NUMBER of articles have been published in the American Gas Journal, as a part of the Fuel of the Future Series, in which there have been discussed the various phases of the heat treatment of metals. In these articles the fundamental principles of heat treatment were studied in some detail and the characteristics of the various processes, such as hardening, annealing, etc., were described. In other articles the economic and industrial phases of this business were gone into in considerable detail in order to prove to the gas man that the heat treating field was one for which gas was particularly well adapted. It is now felt that the underlying factors governing this important industry have been made known to the gas man with a sufficient degree of thoroughness and accuracy so that he can proceed with the application of his fuel to heat treatment with the feeling that understanding all the conditions and cognizant with all the peculiarities of the business, he can safely state his case to the manufacturer, with confidence that he can answer all questions put to him intelligently and understandingly and that he can get the business after he has shown the steel treater what gas has to offer him in the way of advantages that are possessed by no other fuel.

If he gains the confidence of the manufacturer in this manner and is encouraged to go into further detail as regards the application of gas to the particular problem at hand, he then must know first how to design and construct the furnace in which gaseous fuel is going to be employed, and, second, how to calculate the number of cubic feet of gas that will be required per hour or per any other suitable time unit to bring about the desired results.

Design and Construction of the Furnace

Something has been said about this important subject. The design of the gas-fired furnace must be scientifically and practically correct in order for gas to give the good results that are demanded and expected of it. There is no question but that poor results will be obtained even with such an efficient fuel as gas, when the furnace or other apparatus in which it is used is a makeshift affair. This applies to all fields in which gas is employed as a fuel, but particularly to the heat treatment of metal, wherein it has been shown that the conditions are so stringent and must be so carefully controlled that the design of the furnace is just as important as the character of the fuel. One cannot function well without the other. Wherever there is the tendency to try to save a little money by building a furnace on the plant where it is going to be used, with the idea in mind that, inasmuch as gas is so efficient a fuel, it does not matter much what the efficiency of the apparatus is in which it is used, the gas engineer and industrial salesman must exert all effort to correct this impression and to emphasize the importance of the correct design of furnace and the necessity for spending more money in first cost in order to gain the benefits that are certain to be obtained from the use of a correctly designed furnace and a proper fuel.

The Mechanical Improvements in the Furnace

It has also been mentioned that the design of the furnace is important, not only from the standpoint of proper combustion of fuel and proper utilization of heat, but also from the standpoint of the mechanical improvements that may be obtained through the use of conveying devices for eliminating hand labor and reducing the cost of the heat treating process. Steel is heavy and many of the articles that are treated weigh considerably. The chances for reducing the expenses incurred in the heat treating furnace are many. This is the opportunity for the gas company. By urging the manufacturer to change his process and adopt labor-saving trans-

porting devices, the gas man furthers the cause of gas, for it will be found that when gas is employed in a properly constructed furnace, equipped with such devices, the costs will be considerably reduced below what might have been expected and the advantages of such an apparatus will be so evident to the manufacturer that he will be more than satisfied to pay a little more for his fuel so as to be in the position to derive all these benefits.

The Appliance Maker and the Gas Company

The question may be asked, who is to do all this work? Who shall say what the design of the furnace should be? The answer is that the manufacturers of industrial equipment have always been ready to assist those gas companies that do not possess organizations which can undertake this sort of work. It is this co-operation between the manufacturer of industrial appliances and the gas company that really forms the foundation on which industrial business should be built. There is no question that there can be no hit-or-miss methods employed in getting industrial business, if the company is to hold it after it is obtained. The furnace must be correctly designed and must improve the process. Otherwise it is no use in trying to get the business for gas, for, even if it obtained it in spite of inefficiency along these lines, the chances are that it will not be held. The example set by the electrical industry must be emulated by the gas industry if it is to hope to be able to pry loose some of the business that electricity has obtained, just because of the accuracy and adequateness of its business methods, in spite of the high cost of the fuel, business that rightly belongs to the gas industry.

Our purpose now is to describe the methods that are used in calculating the amount of heat that is required for a given heat treatment operation and also to bring out some of the important characteristics of furnaces and operations pertaining to heat treatment processes by discussing specific examples of the same.

Furnace Design

Perhaps the furnace and its design might be better taken up first. As an example, there is taken a heat treating process which has for its purpose the hardening of steel shells. The process was carried out in one of the ammunition plants that was run at full speed during the war. There were two units of furnaces, one for hardening and the other for tempering. It was found that the furnaces operated with an efficiency of 32 per cent. Efficiency in this case meant the percentage of heat that was available in the fuel that was put to useful purpose and absorbed by the metal, steel.

The furnaces that were used in this plant were designed by one of the best-known manufacturers of industrial appliances and were of the high pressure type. Thus gas under pressure was caused to aspirate, to suck in with it all the air that was required for perfect combustion of the fuel. A special form of governor was provided. The furnace had to be specially constructed in order that the heat was properly distributed and used most effectively in the operations.

The result was that the operation of the furnace with gas compared very favorably with oil, although the cost of the oil was rather less than that of the gas. This is just a concrete example of the application of gaseous fuel to a large scale operation in heat treatment in which gas was able to supplant oil.

Concrete Example of Heat Treatment

A concrete example is given of a series of calculations that were carried out to determine the quantity of gas that would have to be used in the hardening of hack saws.

The old type of furnace that was used in this particular plant was oil fired. The furnace was underfired and the hearth furnaces measured about three feet wide by two and one-half feet deep. The hack saws themselves were twelve inches long and haif an inch wide and 0.025 inch thick. These saws were packed into pipes half an inch in diameter. There were a total of thirteen of these pipes that were placed in the furnace and eight hack saws went into

Shell Hardening Furnace

each pipe. The pipes were simply rolled into the horizontal hearth of the furnace at one end, which was the cool end, and at the other end the hot pipe was drawn out by hand, a special hook being used to grasp it. At that moment the temperature of the hot pipe was 1,450 degrees F. A pipe was taken out of the furnace every half minute and as one was thus removed the others were moved up, so that the furnace was kept filled with these pipes throughout the entire operation. The pipes were thus gradually preheated in the anterior part of the hearth furnace before they reached the true heating zone. This system was partially saving of heat. After being treated in this manner the saws were dropped into warm fish oil and then tempered and cleaned. This in fine was the old method used at this particular plant.

Supplanting Oil by Gas

The new method sought to supplant oil with gas and, not only that, but to improve the process as a

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Training the "Service" Personnel *

How it is carried out by a large gas company

Thomas Mellick

Engineer, Public Service Electric & Gas Company, Plainfield, N. J.

THE production, distribution and sale of gas to the public is an accumulation of millions of business transactions. The gas company is the supply house, the consumer is the customer. A business transaction is not satisfactory unless it is advantageous to both buyer and seller, and a concern cannot prosper unless there is a thorough understanding of this scientific law.

The transactions we meet in our business are of two classes: First, the sale of gas usually in quantities based on a month's requirement of the consumer; second, the sale of ranges, water heaters, lamps, mantles, heating stoves, industrial appliances, and the many other appliances involving the 5,000 uses for gas.

The gas company is in business for a reasonable profit, and can serve its patrons best when it is well managed and prosperous. Its object is to sell gas of a quality best suited for the customers' needs and deliver this product adequately to the customers' premises. However, experience has shown that this is not sufficient. We have extended this service to include the maintenance of the consumers' appliances, thus establishing a confidence among our customers that the gas company can and will see that all their utensils are functioning to a high degree of efficiency.

Briefly, we are in the position of making a sale (f. o. b.) satisfactory service.

Function of Distribution Department

The function of the distribution department is to complete this business transaction by satisfactorily delivering the goods. In order to successfully carry out the duties of this department we must have our organization capable of efficiently maintaining district holder stations, including the care and operation of the holders and pumping machinery; installing and maintaining the street main system; installing and maintaining services, district and individual governors; setting, removing and repairing meters; installing and maintaining all types of appliances and fixtures.

In training our men we must start with a broad policy and clear understanding of all our obligations and privileges.

Fortunately, in public service there is no question as to what is expected. No one could ever doubt the high motives of our executives in defining our relations to the public. Our job is to see that these principles are carried down through the ranks and clearly understood by everyone who might in any way come in contact with a customer.

Outline of the Organization

The division organization usually consists of a division engineer as the head; reporting to him are the district superintendents and cadet engineers. The superintendents have their general foremen, foremen, inspectors, fitters, and so on down the line.

The cadet engineers are graduates of the technical colleges, with engineering degrees, and they usually come to us immediately after their graduation. They spend one year in the works and one year in the distribution department before being selected for the particular line of the business to which they are best suited. The distribution cadet starts right into practical work. He must set meters, install and adjust appliances, make main joints and service taps; in fact, he must actually do with his hands all the operations necessary in distribution work. The word "Commencement" holds out its true significance to the college man taking up the profession of gas engineering. The cadet usually gets three years of practical work before being placed in a position of authority and when that time comes he is competent and ready.

The big problem we are facing is the training of these men who have not had the advantages of higher education, and who naturally form the main structure of the organization.

Encouraging the Men

We find among our fellows a considerable number who have an inherent desire to learn and to seek higher positions. Every encouragement is given these men. We have a library at the general office carrying a complete line of literature covering the subjects of gas production, distribution and utilization. This library is efficiently maintained and its books and services are accessible to all our permanent employees. Some men have been helped by correspondence school courses; however, the net results of this kind of education are very low.

Mail Courses

The so-called practical courses usually conducted by mail have not been successful, except in a few cases. The trouble with these courses has been that their promoters fail to consider the factors of brain fertility and mental capacity. They consider the only requirement of a student is the desire to learn. Unfortunately this is not rue, and many an ambitious fellow has been keenly disappointed upon real-

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*Paper read at the Eastern States Gas Conference at Newark, N. J., April 22, 1925.

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

DO YOU EVER DO THIS?

UNDER the head, "Resisting Mr. Salesman," the Standard Rate and Data Digest for February has the following to say regarding resisting the salesman:

"Not all the sales stories are in the current magazine. Here is a conversation between a president and his assistant (quotation marks omitted by request): Is the office boy on duty to keep people from seeing me? Yes, sir. Is there a bench in the hall on which busy men may sit while waiting to see me? Yes, sir. Is there a hidden lock on the gate that leads into the outer office? Yes, sir. Has the telephone girl been instructed to ask all who call for me to give their name and business? Yes, sir, the telephone girl knows all about that. And to consult me before permitting anyone to talk to her? Yes, sir. Is everything arranged here to make it as difficult as possible for people to transact business with this firm? It is. Good, then I'll go into my office and begin plans for our salesmen selling other people!"

This, "Resisting Mr. Salesman," is one of the reasons the cost of distribution is excessive, and while there are numerous sales managers who assume the attitude of business when the other fellow's salesmen call, there is the other type who have come to realize that the salesman usually has a worthwhile idea and story and who have lettered on their doors, "Open, Walk In." It is the sales manager in this class that is making for better merchandising and who has no complaint about man turnover.

SOME folks depend upon the junior office boy or the janitor for window displays. This is mistaken economy and merchandisers who get the jump on their neighborhood give as much time and thought to window displays as to any other sales factor, even collections.

IF HE ONLY HAD GAS

THE other day we saw a salesman from the gas company going along the street carrying a hot spot heater. He had a wire or strap handle fashioned to carry it and while he was selling house-to-house where he could make demonstrations to interested prospects, the thought came to us, wouldn't that fellow attract a lot of attention and pick up a lot of orders if he had something on his hip that contained gas that he could feed to that hot spot as he walked the street? It can be done. If ranges and water heaters can be demonstrated from motor trucks, gas being provided from a compression tank, why not squeeze up some for the house-to-house man? Actual demonstrations produce results and we may as well come to it now as any time.

SEND UP A BALLOON

IT seems to us that a great deal of interest might be created if the gas man advertised some of his stunt sales by sending up gas-filled toy balloons. That's a tip! Elaborate on it and get some adver-

tising and publicity. Get the kids interested—and the grownups will fall in line. There are a dozen ways in which you can work up some interest by the use of the toy balloon.

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

Lesson No. 67

Heat and Change of State

Lowering the Freezing Temperature of Liquids

It has been said that for all intents and purposes the freezing point of a substance in the liquid condition is identical with the fusion or melting point of the same substance in the solid condition. This holds goods for most substances, but in certain instances solidification of the liquid body does not take place at the same point as melting of the solid body.

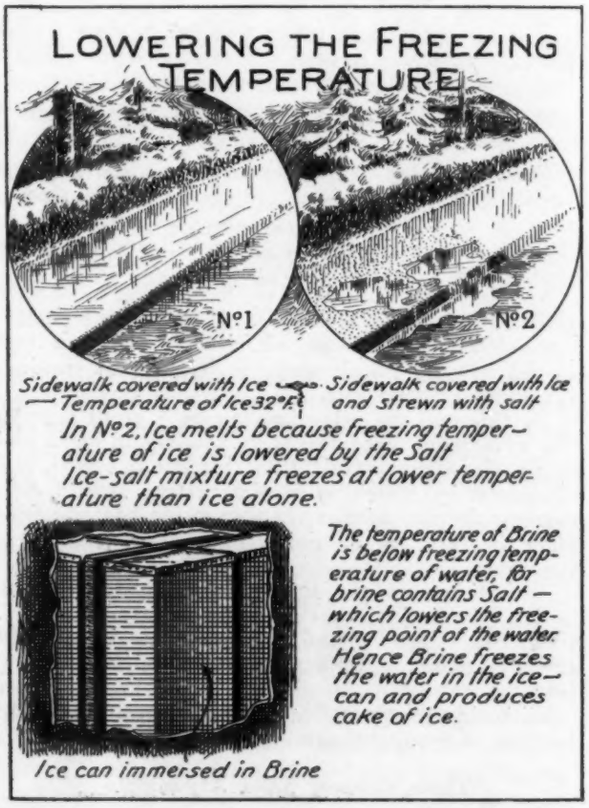
But the melting point of a solid is a characteristic property of the substance that is perhaps of more importance than many of the other properties that it possesses. It certainly is an important property as far as the gas engineer is concerned, for in many industrial operations what is generally effected is the melting or fusion of solids and at any rate the melting point of the materials that are used in the construction of the furnace or heating apparatus is of particular importance, if that of the substances treated therein is not.

Similarly in dealing with liquids an important property is the congealation of the liquid or its freezing temperature. In refrigeration, a field into which gas has recently entered, this is an important matter. Ordinarily the freezing point of a liquid is equivalent to the melting point of the solid. Thus, ice melts at the same temperature at which water freezes. But because it is possible for liquids to become easily contaminated with other substances which dissolve in them, the freezing point of a liquid is often different from the melting temperature of the solid.

The Example of Water

Take the simple case of water. Pure water freezes at zero degrees C. or 32 degrees F. Ice melts at the same temperature. But when a little salt is added to the water, or when a brine is made, then the freezing temperature of the solution is considerably less than 32 degrees F. This is why an effective method of removing ice from pavements by scattering salt over them, for the mixture of ice and salt has a freezing point below that of ice itself and if the atmospheric temperature is higher than this latter temperature, as it generally is in this climate, the ice dissolves, for the simple reason that the melting point of the salt-ice mixture is lower than that of the ice alone, or, in other words, the freezing point of water has been lowered by the addition of the salt.

This property of salt, and of other substances as well, in lowering the freezing point of water is also taken advantage of in a practical way in the manufacture of artificial ice. The chilling fluid is a solution of brine which circulates through pipes surrounding the ice-can filled with water. The temperature of the brine is lower than the freezing point of water, with the result that the water is frozen in the can and cakes of ice are formed.


LOWERING THE FREEZING TEMPERATURE
N°1
N°2
Sidewalk covered with Ice — Temperature of Ice 32°F.
Sidewalk covered with Ice and strewn with salt
In N°2, Ice melts because freezing temperature of ice is lowered by the Salt Ice-salt mixture freezes at lower temperature than ice alone.
The temperature of Brine is below freezing temperature of water, for brine contains Salt — which lowers the freezing point of the water. Hence Brine freezes the water in the ice-can and produces cake of ice.
Ice can immersed in Brine

Selling Gas Appliances*

Price, performance and looks as essentials in advertising copy

Janet MacRorie

Public Service Electric & Gas Company

WHILE the printed word is what we commonly think of as advertising, advertising, as a matter of fact, has a far greater scope. Each man and woman in an organization who even in a remote way comes in contact with a customer is a living advertising medium. Your company advertising is affected by the attitude toward the public of salesperson, delivery man, gas fitter.

Now, as anyone can readily see, this personal kind of advertising can have a powerful influence for good; it may have an equally powerful influence that is hurtful.

It is necessary, therefore, before using newspaper space, to see that our house is in order. Every company representative must be imbued with the policy of the company that stands back of him.

We must all get together on these policies and stand with a solid front for them. Team-work will put them over; even brilliant individual effort will not get the same effect.

Need of Co-operation

Close co-operation between sales force and advertising department is absolutely necessary. Necessary in any business, of paramount importance in the gas business, with its two-fold standing in the community, that of merchant and public utility.

For reaching the public we have found no better medium than the newspapers. It is the public bulletin which everyone reads. It reaches all classes. It is the last cry on all matters; it must be the last cry in advertising, too.

To this end the salesman can be a great help to the advertising department by sending in ideas and suggestions that result from his contact with the customer, by watching for interesting stories concerning the use of gas ranges, water heaters, fireplace heaters, by obtaining photographs and testimonials.

Advertising of gas appliances, to be continuous in its stimulation, must be constantly changed, freshened, improved, and for this fresh point of view the advertising department must depend on the sales force.

With this co-operation established, we are ready for the newspaper page.

Three General Sales Arguments

There are three general sales arguments that may be relied upon to interest women in gas appliances. Let us use a gas range to illustrate.

One is "how it cooks," another "how it looks," the third, "what it costs." The precedence of one over the other depends largely on the personality of the customer.

The other day a customer came into one of the stores of a large gas company. She wanted to buy a range and she decided upon a fine looking half-enamelled model. She walked around and around it. The particular model she was looking at happened to have a right-hand oven. After her inspection she said:

"I wish the oven was over here."

"We can give you the range with a left-hand oven," the salesman said.

"Oh, that's fine," said the customer. "You see, I live in an apartment and when my kitchen door is open everyone can see my range when they go up and down the stairs. I want them to see what a pretty stove I have."

That's what may be called selling on "looks."

The Performance of the Range

There is another class of customer whose interest lies in the oven. "How well does it bake?" is her query, for she bakes many loaves of crispy crusted bread each week and she wants to know whether this can be baked directly on the oven bottom, that is, without pans, which may be done in an enamelled-lined oven.

While this woman may also be interested in the appearance of the range, its cooking capability is what interests her most and that's what we might term selling on "how it cooks."

Lastly, there is the customer who discounts looks, turns a deaf ear to its cooking or service qualities and whose attention can only be had if the price be low.

Since advertising is nothing more or less than printed salesmanship, we might do well to take our cue from these illustrations.

Copy Versus Illustration

And right here we find ourselves standing on the old battlefield of copy versus illustration. These two are as prone to battle as capital and labor. Words are potent things and so are pictures. Some people think you don't have to use words at all. Just get a picture of the appliance in the paper with

(Continued on page 364)

*Presented at the 1925 convention of the Eastern States Gas Conference.

As The Journal Views It

EDUCATION IN THE GAS INDUSTRY

It is by no means a new development for an industry to spend time and money in training the men of its organization to fit them for advanced positions. There are many industries today that are paying close attention to this important phase of their business. And, again, it must be pointed out that it is by no means an entirely altruistic performance, for that industry or that company that goes into this work is not only benefiting its employees, but itself, as well. There can be no greater asset to any organization than a well knit body of adequately trained men, well versed in the technical details of the business and imbued with the spirit of co-operation and helpfulness.

It is altogether fitting that the subject of educating employees and the problem of enlisting new blood into the industry should be discussed at this time. It will not be very long before the many colleges in the country turn loose large numbers of graduates at their annual commencements. Many of these men will be technically trained and some will have had special training in the gas field.

The problem that those men will have to solve is to determine what branch of work they are to follow. The problem of the gas industry is to attract those who are worthy of consideration and induce them to enter the gas organization as cadet engineers and students in one department or another of the gas company.

The demand today in all lines of business is for better men. Not that the old men are to be disparaged in any way, but simply because the demands on industry as a whole and on the gas industry in particular are becoming more and more complicated and more and more of a highly technical character, demanding specially trained men, men possessed of an intensive understanding of the many varied problems facing industry today and, while well versed in theoretical knowledge, of the proper practical cast of mind to be able to effect their correct solution.

Gas companies have paid considerable attention to training men for higher positions in the organization. Many gas organizations have cadet engineers who are recruited from college graduates. It is necessary that the supply of these men be replenished each year and it is well for the gas industry now to take steps to encourage technical graduates and those who will become graduates within the next few months, to consider the prospects that are offered them in the gas field.

The education of employees, of course, does not stop at the cadet engineer. A similar opportunity should be given all employees of the gas organization who have the ambition to better themselves, who possess the necessary perseverance of those who wish to become proficient in their work. Every chance should be given them to become more efficient employees. There is no question but that such training, carried out by the gas company itself is of greater importance, of greater effect, than any other method which the employee himself may choose, as, for example, joining a correspondence school. There is no question that direct personal contact between teacher and student is of great value and tends to lessen the difficulties of acquiring the special technical knowledge that a gas man must possess if he is to advance to important position in the organization.

It is hardly questionable that the education of the employees of the gas industry is one of its most potent problems. It is work that can only redound to the benefit and credit of that gas company that undertakes it. Each and every company should have an educational directory in control of such work so that the maximum benefits can be obtained from it. A well-defined plan of attack, a judicious use of the educational literature that appears each and every week in the trade journals, coupled with the proper supervision and guidance, will yield the gas company a corps of men specially equipped for tackling the difficult problems and arduous tasks that face them as a regular daily routine in their work in the gas field.

Secrets of Success In Selling Securities*

Avoiding various pitfalls in stock and bond selling to the customer

Percy H. Whiting

Manager, Customer Ownership Division, Henry L. Doherty & Co.

I STRONGLY suspect there is some catch to that fine sizzling title that has been tacked to my talk: "Secrets of Success in Selling Securities to Customers." Cold sober though I am, I can't even speak the title—much less talk on it. As far as I know there are no secrets to stock selling.

What I am really going to talk about is the "Pitfalls of Customer Ownership Selling."

It is customary, in appearing for the first time before a body like this, to qualify as an expert.

I make for myself, therefore, the claim that I am probably America's leading expert on the Pitfalls of Employee Selling—and with good reason. I believe I have personally fallen down and wallowed around in more of these pitfalls than any other living man.

And, since I am not smart enough to avoid them, perhaps I am the best man to warn you against them.

The Aid of a Regular Bond House

The first yawning pitfall of customer ownership selling, and I have personally helped to dig out some gas companies that fell into this one, is the pitfall of supposing that some regular bond house or security house can put across employee selling for you.

As far as I know, there are only two ways to get customer ownership—one is through employee campaigns, the other is to develop your own force of full-time salesmen. The former is cheaper and easier—use it if you can.

Let's take up first, then, the selling through employee.

The first and widest chasm that yawns for the unwary is to suppose that a long-time or perpetual campaign will produce more stock easier than a short, sharp campaign. It won't. We put in sales for 25 or 30 of our own companies and for outside companies as well and I have supervised close to 100 employee campaigns and I have tried them in various lengths, from six hours to six months, and I am now firmly convinced that a ten-day campaign is ideal. To prepare for a ten-day campaign requires about six weeks.

Ten-Day Campaign Advantages

A ten-day campaign has two great advantages:

First: The disorganization of other company activities lasts at worst only ten days.

Second: In a short campaign you are not required to do any re-jazzing. Before the first shot of pep has been sweated out, the campaign is over. Nobody has a chance to be bored. The task of keeping up enthusiasm through a ten weeks campaign would stop a government press agent.

The next pitfall to avoid is the one that results from thinking that a really successful sale can be put across without plenty of good advertising. It can't be done.

As a general rule, spend about one dollar for advertising for each share of stock you plan to sell. Make the newspapers the backbone of your advertising campaign, but don't overlook direct by mail either.

Good Advertising Needed

Note that I said you needed "good" advertising. I can't tell you how to write good advertising, but I can tell you how to develop a man who can write it for you. Get a man who knows the advertising business—a good word carpenter. Let him write the first campaign, which he will do very badly. Then make him sell stock behind his own advertising. Repeat the process every time you have a sale. After a while it will dawn on this man that his job is not to fill so much space to tell what a heluva fine company you have, but to write copy that will help the employees to sell stock.

The third pitfall—and it has been the grave of most of the employee campaigns that have failed—is to assume that the calls of employees on prospects will get themselves made.

Take my word for it—the hearts and souls of successful campaigns is Getting the Calls Made.

We worked up to our plan of exposing our employees to sales as a result of making a series of blunders.

In the old days we used to go to employees and say, "Well, boys, let's go out and sell some stock." That was obviously ridiculous. What did office help and meter readers know about selling stock? It would be just as reasonable, and but little less effective, to ask me to go out and shoot trouble. Employees naturally said, "We can't sell stock," and they didn't. You can't force a man to sell stock any more than you can force him to play the flute.

Improving on the Plan

We improved on this original plan by giving employees a brief sales talk and asking them to go to

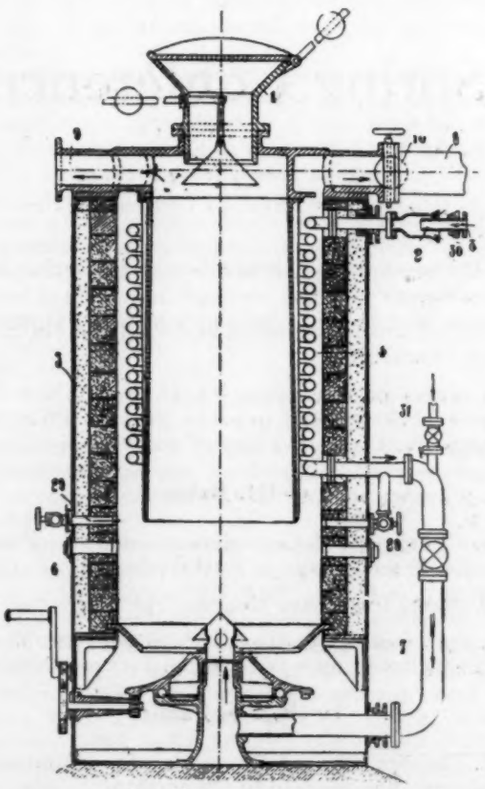
(Continued on page 365)

*Delivered at the 1925 Convention of the Eastern States Gas Conference.

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

GASIFICATION OF COAL

THE apparatus which is seen in the accompanying illustration is used for the purpose of gasifying combustible materials. The distillation retort is seen at 4 and the combustion zone shown, into which the combustible material is fed after being distilled, is indicated at 6. A mixture of air and steam is admitted through 2 and 3. This mixture is pre-heated by passing through the coil and is finally injected at the base of the apparatus through pipes 7 and the rotating grate.



Two streams of gas emanate from this apparatus. In the first place there is the gas obtained by distillation, which is a gas of high calorific power, and which leaves the apparatus through the opening 9. Then, again, there is the water gas, a gas of low thermal value, which leaves the apparatus through the opening 8. Due to the fact that diffusion takes place through the walls of the retort, which are heated to a high temperature, the hydrogen in the water gas reaches zone 4 and becomes mixed with the coal gas, increasing the quantity of the gas thus produced. In another installation steam is injected below the bed of ignited combustible matter, with the result that the carbon monoxide of the water gas is converted into hydrogen and carbon.

Then, again, if air containing additional oxygen is used in place of ordinary air, it is made to pass through an apparatus which is filled with a mixture of carbon and limestone, and it is thus possible to make calcium carbide and thereafter, with the aid of nitrogen, which is available in the air, to produce cyanamide.

This process and apparatus are patented in French patent No. 566,178.

CARBONIZATION OF LIGNITE AND SUB-BITUMINOUS COALS

IN a publication entitled "Investigations of Fuels and Fuel Testing," issued by the Canadian Department of Mines, there is included a paper which discusses various results that were obtained in carbonization of lignites and sub-bituminous coals. The black lignites and certain types of sub-bituminous coals were used for this purpose. Low temperature carbonization runs were made in a lead bath, temperature controlled electric furnaces. The maximum temperature of carbonization was in the neighborhood of 600 degrees C. Carbonization was also carried out at high temperatures.

It was found that the increase in calorific value per unit weight of the char over that of the raw coal charged was roughly from 25 to 47 per cent in the case of lignite and 14.5 per cent in the case of sub-bituminous coals.

The black lignites and sub-bituminous coals are termed domestic fuels and are used extensively for this purpose. When carbonized, an incoherent char is produced which requires to be briquetted to improve its burning and handling qualities as a household fuel. For the lump coal (irrespective of the liquid and gas by-products) the necessity and desirability of carbonizing would seem to bear an indirect relation to their use in the raw state.

The yield of char was roughly 54, 58 and 63 per cent of the coal charged respectively for the three coals carbonized at low temperature, compared with 68 and 72 per cent for the two sub-bituminous coals. The medium-grade lignite giving 58.4 per cent char at low temperature gave 55.8 per cent at high temperature, while the average yield of char from sub-bituminous coals at high and low temperatures was 71.0 per cent and 61.7 per cent respectively.

The yield of gas varied from 4,500 to 5,000 cubic feet per (2,000 lb.) ton for the three lignites at low temperature compared with an average of 3,100 cu. ft. for the two sub-bituminous coals. At high temperature this relation was reversed, viz.: 8,800 cu. ft.

from the lignite tested and an average of over 10,000 for the two sub-bituminous coals.

The tar yields were 3.3, 6.2 and 6.3 Imp. gallons respectively for the three lignites at low temperature compared with 9.9 and 8.6 gallons for the sub-bituminous coals. At high temperature the tar yield fell to less than four gallons for the lignite tested and an average of about five gallons for the sub-bituminous coals.

SELLING GAS COMPANY SECURITIES

This is the title of a special report issued by the Gas Sales Stimulation Committee of the Commercial Section of the American Gas Association.

The report is very much detailed, divided into seven separate parts. The first tells of what the salesman has to sell, giving in a general way an insight into what gas really means to mankind. The second part is concerned with a plan of organization. The third part with central operation and direction. The fourth with publicity and advertising operations. The fifth describes record maintenance and use and gas samples of cards and reports that may be used for this purpose. The sixth relates to general recommendations and gas directions for the appointment of salesmen, compensation of salesmen, and newspaper mat service. There are three pages of illustrations depicting the various duplicate advertisements from representative customer ownership companies. The last section is devoted to salesmen ammunition and is in the nature of a catechism, with questions and answers.

Program for Annual Spring Conference of A. G. A.

The annual spring conference of the executive board and advisory council will be held at the Hotel Traymore, Atlantic City, N. J., May 22-23, 1925.

The program is as follows:

I. The Future of the Gas Industry

1. Competition with Electricity.

2. Competition with Oil.

3. Fuel Oil Supply.

4. House Heating and Industrial Gas.

5. Heating Values, How to Educate the Commissions and the Public.

6. New Developments.

7. Co-operation with Manufacturers for Development of the Industry.

Leaders of discussion: D. D. Barnum, Boston, Mass.; R. B. Brown, Milwaukee, Wis.; H. L. Doherty, New York; Geo. S. Hawley, Bridgeport, Conn.; H. O. Loebell, New York; Charles A. Munroe, Chicago, Ill.; Floyd Parsons, New York; Charles J. Ramsburg, Pittsburgh, Pa.; R. M. Searle, Rochester, N. Y.

II. Safety

1. Deaths Attributed to Asphyxiation, with report on study made at A. G. A. headquarters.

2. Education of Press as to Headlines and Treatment of News.

3. Program of Definite Study of Entire Subject by a Commission.

4. Safety of Employees and Public in Manufacture and Distribution.

Leaders of discussion: O. H. Fogg, New York; Walter Forster, Independent Bureau, Philadelphia, Pa.; J. W. West, Jr., New York.

III. Rates

1. Education of Commissions and the Public in Equitable and Scientific Rate-Making.

2. Rates for House Heating, etc.

Leaders of discussion: C. S. Reed, New York; T. V. Purcell, Chicago, Ill.; Carl D. Jackson, New York.

IV. The Public

1. Definite Plan of Interesting Gas Companies in Customer and Employee Ownership.

2. Public Information and National Advertising.

3. Education of Employees and Their Relations to the Public.

Leaders of discussion: B. J. Mullaney, Chicago, Ill.; C. E. Paige, Brooklyn, N. Y.; Earle W. Hodges, Little Rock, Ark.

Catechism of Central Station Gas Engineering in the United States

Installment No. 67

(Continued from last week)

The maximum temperature that can be produced by burning a gas in air can therefore be determined by dividing the calorific value of the gas, per pound, by the sum of the numbers obtained by multiplying the weight of each of the products of combustion produced from 1 lb. of gas by its proper specific heat, the nitrogen mixed in the air with the oxygen required for combustion being considered as one of the products of the combustion, and adding to the figure so obtained the initial temperature of the gas and air, which, unless stated, may be taken as 60 degrees F.

The values at ordinary temperatures of the specific heats at constant pressure of the products of combustion are often used in determining the maximum flame temperatures that can be obtained, but this is not correct, because the specific heats of gases increase with the temperature and therefore the use of the specific heats at ordinary temperatures makes the calculated temperatures too high. The specific heats of the ordinary products of combustion are given, for a wide range of temperatures, in the table which forms part of the answer to question No. 327.

An Example

To illustrate by a single example, the maximum temperature that can be produced by the combustion of carbon monoxide, CO, may be determined as follows:

1 lb. of CO requires for its combustion to carbon dioxide, CO_2, 0.571 lb. of oxygen, which will have mixed with it in the air $0.571 \times 3.31 = 1.89$ lb. of nitrogen, N_2, and the products of the combustion of 1 lb. of CO will therefore be 1.571 lb. of CO_2 and 1.89 of N_2. The calorific value of CO is 4383 B.t.u. per pound. Assuming a flame temperature of 3632 degrees (the specific heats of CO_2 and N_2 are respectively 0.368 and 0.327 and the equation for the maximum increase in temperature in degrees Fahrenheit is

$$T = \frac{4383}{1.571 \times 0.368 + 1.89 \times 0.327} = \frac{4383}{1.196} = 3665$$ degrees F. Adding 60 degrees to this the flame temperature would be 3725 degrees. The difference between the assumed and the calculated temperature is too great, so it is necessary to make another calculation.

Assuming 3812 degrees as the temperature, the specific heats of CO_2 and N_2 are found to be 0.377 and 0.331 respectively and the maximum increase in temperature is

$$T = \frac{4383}{1.571 \times 0.377 + 1.89 \times 0.331} = \frac{4383}{1.218} = 3599$$ degrees F. Adding 60 degrees to this the flame temperature would be 3659 degrees, and again the difference between the assumed and the calculated temperatures is too great. But in this case the assumed temperature is larger than the calculated, while in the first calculation the reverse was true, therefore it is necessary to interpolate between these two assumed temperatures because the table does not give intermediate temperatures.

Taking the temperature midway between the two already used, which is 90 degrees greater than the first temperature assumed and 90 degrees less than the second, and is as close as the table can be used, the specific heats of CO_2 and N_2 at 3722 degrees are respectively 0.3725 and 0.329, and the maximum increase in temperature in degrees Fahrenheit is

$$T = \frac{4383}{1.571 \times 0.3725 + 1.89 \times 0.329} = \frac{4383}{1.207} = 3631$$ degrees F.

Adding 60 degrees to this the flame temperature would be 3691 degrees. This is as near to the assumed temperature as it is possible to figure from the table and can therefore be taken as the theoretical flame temperature of carbon monoxide gas.

Theoretical Flame Temperature

330. Calculate the theoretical flame temperature that can be produced when hydrogen, H_2, marsh gas, CH_4, and olefiant gas, C_2H_4, are being burnt in air.

Ans. According to the answer to question No. 329, the maximum increase in temperature that can be produced by burning a gas in air can be determined by dividing the calorific value of the gas, per pound, by the sum of the numbers obtained by multiplying the weight of each of the products of combustion from 1 lb. of gas by its proper specific heat, the nitrogen mixed in the air with the oxygen required for combustion being considered as one of the products of the combustion. For gases containing hydrogen, the heat available with the water in the state of vapor must be taken, since it is evident that the water produced by the combustion of the hydrogen will pass off as vapor.

Applying the rule previously given to the different gases named in the question, the following results are obtained: The heat available from 1 lb. of hydrogen with the water in the state of vapor is 52,038 B.t.u.; and the products of its combustion are 9 lb. of aqueous vapor and 26.48 lb. of nitrogen, as given in the answer to question No. 290. Assuming a flame temperature of 3452 degrees F. it is

found from the table given in answer to question No. 327 that the mean specific heat of water vapor for this temperature is 0.732 and that of nitrogen is 0.323. This gives for the fraction from which to determine the increase in temperature

$$\frac{52038}{9\times0.732+26.48\times0.323} = \frac{52038}{6.588+8.553} = 3437$$

degrees.

Adding to this 60 degrees, which is the normal temperature of the atmosphere, will give a flame temperature of 3497 degrees. The maximum flame temperature that can be produced by the combustion of hydrogen and air may therefore be taken as being in round numbers 3500 degrees F.

Marsh Gas

The heat available from 1 lb. of marsh gas with the water in the state of vapor is 21,502 B.t.u.; and the products of its combustion are 2.25 lbs. of aqueous vapor, 2.75 lb. of carbon dioxide and 13.24 lb. of nitrogen. Assuming a flame temperature of 3092 degrees F. the table gives the mean specific heats for this temperature as carbon dioxide 0.342, water vapor 0.700 and nitrogen 0.314. The fraction from which to determine the increase in temperature is therefore

$$\frac{21502}{2.75\times0.342+2.25\times0.7+13.24\times0.314} = \frac{21502}{0.840+1.575+4.1574} = \frac{21502}{6.5724} = 3272 \text{ degrees F.}$$

Adding 60 degrees in this case will give a flame temperature of 3332 degrees, but the difference between the assumed and calculated temperatures is too great, so it is necessary to assume another temperature. Taking this as 3272 degrees, the mean specific heats are carbon dioxide 0.351, water vapor 0.716 and nitrogen 0.318. The fraction for the increase in temperature thus becomes

$$\frac{21502}{2.75\times0.351+2.25\times0.716+13.24\times0.318} = \frac{21502}{0.965+1.611+4.21} = \frac{21502}{6.786} = 3169 \text{ degrees.}$$

Adding 60 degrees, gives a flame temperature of 3229 degrees F. This is only 43 degrees lower than the assumed temperature, which is within the limits of error for the table of specific heats.

Olefiant Gas

The heat available from 1 lb. of olefiant gas with the water in the state of vapor is 20,461 B.t.u.; and the products of its combustion are 1.29 lb. of aqueous vapor, 3.14 lb. of carbon dioxide and 11.35 lb. of nitrogen.

Assuming a temperature of 3542 degrees F. and interpolating for the mean specific heats, these are found to be, carbon dioxide 0.364, water vapor 0.74 and nitrogen 0.325. The calculated increase in temperature is therefore to be found from the fraction

$$\frac{20461}{3.14\times0.364+1.29\times0.74+11.35\times0.32} = \frac{20461}{1.143+0.955+3.689} = \frac{20461}{5.787} = 3535 \text{ degrees.}$$

Then 3535 degrees + 60 degrees = 3595 degrees F., which is near enough to the assumed temperature to be allowed to stand.

The flame temperatures of any other gases can be found in the same manner.

Flame Temperature of Illuminating Gas

331. Calculate the theoretical flame temperature of an illuminating gas which has the following composition by volume:

Carbon Dioxide, CO_2	2.7%
Oxygen, O_2	0.7%
Heavy Hydrocarbons	12.8%
Carbon Monoxide, CO	30.7%
Hydrogen, H_2	32.4%
Marsh Gas, CH_4	13.9%
Higher Paraffins, C_nH_{2n} plus $_2$	2.4%
Benzene Vapor, C_6H_6	0.6%
Nitrogen, N_2	3.8%

It is assumed that combustion takes place in air and that the heavy hydrocarbons are Olefiant Gas, C_2H_4, and the higher paraffines are Ethane, C_2H_6. (See answers to questions No. 318, No. 290 and No. 327.)

Ans. The maximum temperature that can be produced by burning the gas in air can be determined by adding to the original temperature of air and gas, which may be taken as 60 degrees, as no other figure is stated, the quotient obtained by dividing the calorific value of the gas per pound by the sum of the numbers obtained by multiplying the weight of each of the products of combustion produced from 1 pound of gas by its proper specific heat, the nitrogen mixed in the air with the oxygen required for combustion being considered as one of these products.

The heat available per cubic foot of the gas in question, with the water in the state of vapor, has already been given in the answer to question No. 318 as 569.4 B.t.u.

The Details of Calculations

The amount of heat required to raise the temperature of the products of the combustion of gas 1 degree F. is found by obtaining the sum of the numbers given by multiplying the weight of each of the different products of combustion by its proper specific heat.

(Sixty-eighth Installment Next Week)

THE FUEL OF THE FUTURE—WHAT SHALL IT BE?

(Continued from page 350)

whole. It was accordingly necessary to treat more saws at one time and this was done by using one and one-half inch tubes in which one hundred saws could be inserted. Thus the gas man was interested in improving the process as well as applying gas to it. This is always the function of the industrial gas engineer, and, in fact, may be called the prime reason why he can always interest the progressive manufacturer. It may indeed be a question whether gas could make so great progress in the industrial field if it were not that the industrial gas engineer effects a saving in fuel consumption and reduction of losses by increasing the thermal and mechanical efficiency of the heating process, even though he introduces a fuel that costs more per unit than the one use before.

First Idea Not Successful

The first idea that suggested itself to the gas engineer in this case was to use a large-sized pipe and place a large number of saws in the pipe. However, when this was tried under practical conditions, it was found that the saws came out crooked. Hence an investigation had to be made to determine the reason for this and it was then found that its exact causes could not be located. The saws were crooked and that simply meant that something had to be done or else gas could not be used in the process. It was acknowledged that the combustion conditions in the gas-fired furnace were such as to make for more equal temperature throughout than in the oil-fired furnace. Hence irregular heating could not be the cause of crookedness in the saws, but the fact remained that the saws were crooked and could not be sold. The gas man had to make good.

So the next thing examined was the quenching oil. The oil that was used on the saws that were treated in the gas-fired furnace had only a temperature of 175 degrees F., while that used for quenching the saws that were treated in the oil-fired furnace was 300 degrees F. A hotter oil was then used and better results were obtained with the gas-fired furnace.

Rolling the Pipes

But one thing seemed to be of even greater importance, and that was the manner of handling the pipes while they were in the heating furnace. While the pipes were rolled in the oil-fired furnace they were allowed to remain on one side during the heating-up process in the gas-fired furnace. It was claimed that the rolling of the pipes was the determinative factor in securing straight hack saws. The industrial gas engineer was up against a proposition here that required a great deal of tact. While he did not wish to take the personal opinion of the foreman of the shop as to what gave the proper saws, nevertheless he did not wish to enlist him against his interests by turning him down. Many times the foreman of a process will have certain ideas about it which are gained from actual experience and which may be correct in certain respects, but the empirical nature of such knowledge must always be taken into consideration and an impersonal test must be made to see if the results claimed are really positive.

Testing the Straightness of the Saws

In this particular case the industrial gas engineer was required to devise a system of testing the straightness of saws, so that he could compare those that were treated in the oil-fired furnace with those treated in the gas-fired furnace. The method was a very simple one and consisted in placing the saws against a straight edge, which was supposed to represent the ideal saw. Then the maximum deviation from a straight line in the saw was measured, as indicated in the accompanying diagram (Fig. 1). A large number of tests were made with different saw blades and it was soon seen that the contention of the foreman was correct. Rolling the pipe did give better results. The trouble was, however, that the gas-fired furnace had been built without providing any means for rolling the pipes.

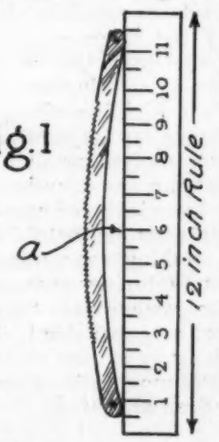


Fig. 1 — Testing the Straightness of the Saw Blades.

The Time Element

Another difficulty that arose was the question of time. It was estimated that each pipe would have to remain within the furnace for a period of thirty minutes. But it was found that this period of time was insufficient to yield a product that was of the correct quality. There were too many rejections. Here, again, the gas engineer had to use his wits. Tests had shown that in heating up a single pipe in an experimental furnace a period of thirty-five minutes was sufficient, but when the pipes are heated in a continuously operated furnace it is evident that conditions are entirely different. In the first place the introduction of the cold tubes into the furnace at the intake end has the natural effect of reducing the temperature at that point. This meant that the saws could not be heated up properly within the same allotted period of time in the continuous furnace, with the result that the time of heating had to be extended and, furthermore, the number of saws heated at one time had to be reduced from 100 to 77.

The Sloping Furnace

The gas engineer was then called upon to use his ingenuity once again. It was necessary to make some change in the design of the furnace so that a larger output of saws could be obtained and the quality of the product maintained at a high degree of perfection. The task of the industrial engineer

was to develop an entirely new furnace and he had to experiment quite a while before the proper design was secured.

This is in reality a very fine example of the work that has to be done by the industrial gas engineer in installing gas in an industrial plant. It is not merely a matter of connecting up a gas line with the gas-fired furnace. There are many more and far more important details which much be given due consideration before gas will give the results that are expected of it. Sometimes the industrial gas engineer has to conduct so intensive an investigation into the matter that he acquires a greater knowledge about the thermal conditions surrounding the process than that possessed by the manufacturer himself. The writer has heard the query put at a meeting of a sectional association as to whether or not the gas man is required to have such knowledge and whether it is not presumptuous on his part to attempt to teach the manufacturer something about his own process. It is a fact that the gas man does at times require a very intimate knowledge of manufacturing operations and sometimes he actually does teach the manufacturer something concerning the thermal aspect of the manufacturing process which was unknown by him. The gas engineer thus becomes a thermal expert. He has an expensive fuel to install, comparatively speaking, and he must change the process so as to effect economies in order to justify the installation of gas-fired apparatus.

A Furnace of New Design

Thus in this particular case the gas man had to design a furnace which would give better results than those previously used in the process. He determined to make the hearth of the furnace inclined and roll the pipes, containing the saws, down the inclined hearth, which is underfired. First a small experimental installation was devised and the results obtained with this installation showed that the entire idea was feasible. It was found right at the outset that a door had to be provided at the outlet end so as to prevent the pipes from rolling out of the furnace except when this was desired. Accordingly, a swing door was invented. This door was a welded steel box made of one-eighth inch metal and filled with sheet asbestos two inches thick. The inside plate of this door was made in such a manner as to be easily removable and renewable. In order to prevent warping, large holes were made around the bolts which fasten this inside plate to the colder back-plate of the door and a space was provided for the expansion that takes place when the temperature rises. The opening of this door is controlled by a foot pedal and lever attachment and the door is open only as long as the foot pedal is pressed down and closes automatically as soon as the foot is taken away. This device is seen in the occompanying Fig. 2.

The door effectively stopped the pipes from rolling out of the furnace prematurely. Then there was required an additional arrangement for taking out the pipe when this was desired.

Details of the Furnace

The hearth was covered with a steel plate sixteen inches wide and half an inch thick. This prevented it from deteriorating. A piece of steel was riveted to the lower end of this plate, which prevents the pipes from rolling down. (See Fig. 3). A peep hole was provided, as is seen. This peep hole always remained open and through the hole there was inserted a hook with which to take out the pipe. When a pipe is pulled with this hook it rolls down against the door and, as the door is opened, by pressing down on the foot pedal, the pipe rolls out of the furnace and onto the holding device (a). Then it can be lifted off by means of tongs.

Of course, after one pipe is removed, all the others in the furnace roll down the inclined hearth and come to a stop at the point (b). Sometimes this operation is not altogether automatic and then a hook is inserted and the pipes are made to roll down. It is important that the last pipe in the series be kept at a distance no less than eighteen inches from the door, for the temperature in the immediate vicinity of the door, although this is carefully made and well insulated, is too low for hardening.

The Results

As the erector of this installation remarked, he left the manufacturer perfectly satisfied with it and later on it was seen that the saving in a year's time was material as compared with the small oil furnaces that had been used in the plant heretofore. The saving, it must be remembered, was mostly in labor, and only in a small part in the fuel cost. This

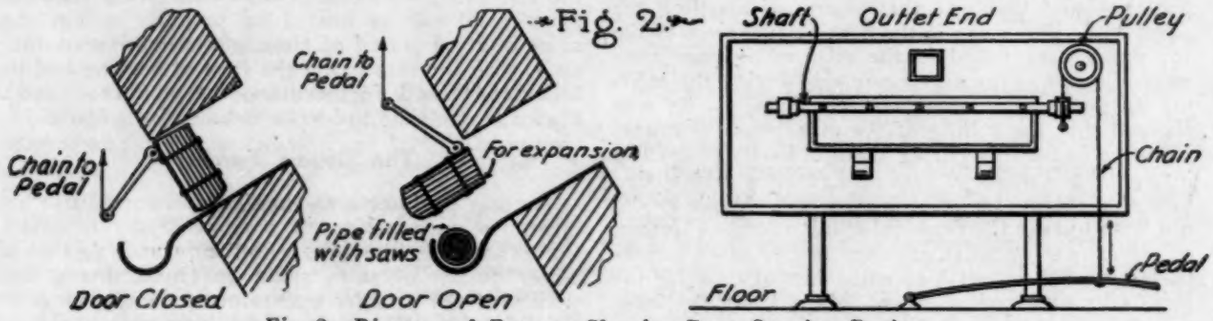


Fig. 2—Diagram of Furnace Showing Door Opening Device

is a mighty good example of the way in which the ingenuity of the industrial gas engineer was instrumental in finding a new use for gas, opening up a new field for the gas company, but also leaving the manufacturer greatly pleased with the entire arrangement, even though he was asked to pay more per B.t.u. for his fuel.

The automatic character of the handling of the materials that were being hardened also resulted in a saving in fuel cost, even with the higher-priced gas. But the main advantage was in the reduction of labor costs due to the elimination of crude methods of handling the saws. Here the gas engineer was instrumental in improving the manufacturer's process and perhaps it might be said that he demonstrated here again that when he had to gain a thorough knowledge of details of the process employed by the manufacturer he just went ahead and made it his business to do so. The results showed very conclusively that he was successful. It was also mentioned in the report on this installation that the hygienic conditions in the saw hardening plant were materially improved by the substitution of the gas-fired furnaces for the old oil-fired apparatus.

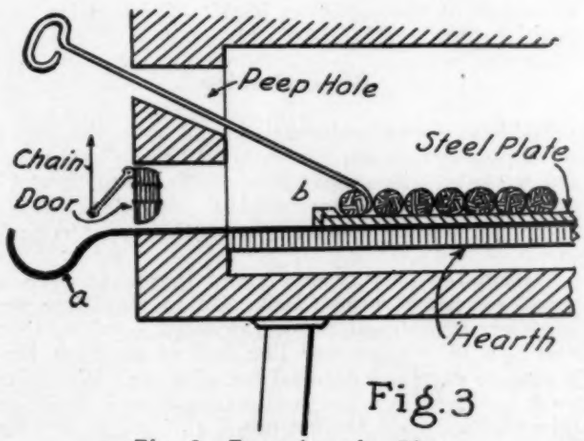


Fig. 3—Removing the Pipes

It may be well to mention in closing that you always judge the value of a man or a product by the results you obtain from it. The man who has knowledge and does not use it is of small importance to society. It is the same with a product like gas. It can do the work. That is certain. But all the talk in the world will not convince the prospective customer that this is so. Prove it to him in actual reality and he will be glad to adopt gas as a fuel in preference to what he is using at the present time.

An actual demonstration is always viewed with more respect than theoretical argumentation. It may be true that progress is perhaps slower when such intensive studies as have just been described must be made before a customer can be secured, but it is equally true that the time and money spent in such an undertaking are more than compensated for by the business that is gained and permanently held by a well-satisfied industrial customer.

What has been said about this particular example of the application of gaseous fuel to an industrial operation pertains equally as well to other industrial applications of gas. Each, of course, is characterized by details that are peculiar to it and it is absolutely impossible to establish any concrete principles on which to base the attack on the problem and its solution. All that can be said is that real effort must be made by the industrial gas salesman and engineer to acquire a comprehensive knowledge of the operations. He can then proceed to the solution of the problem with gas as the fuel and generally he will be successful.

TRAINING THE "SERVICE" PERSONNEL

(Continued from page 351)

izing that he simply cannot understand abstract teaching. This only applies to new lines of thought. It seems that a man never gets too old to comprehend new ideas pertaining to his particular line of work. Therefore, the best training we can give, outside of actual contact with the work, is the shop meeting.

Shop Meetings

In most of the public service shops meetings are held at least twice a month, at which time the subjects of rules and methods are informally discussed, resuscitation drills are held, and whenever possible a representative of a new appliance demonstrates it before the men. In some of the larger situations it is impossible to get all the men together at a meeting. They, therefore, get their instructions in small groups.

As an example of the size of this problem in public service, one must consider that at the time of compiling this paper we had in the service 382 fitters and 93 street foremen. These are only two classes, but comprise the nucleus of the distribution department organization. There is an old saying, "Experience is the best teacher," and it has its best application in our field. I sometimes suspect that its author was a gas engineer. Our whole theory of training is based on experience. We send our new men out with experienced men and our turnover record indicates how we cling to this theory.

The average length of service for the fitters is nearly six years. Several fitters have completed 25 years' service.

The 93 street foremen have served an average of eleven years and seven months and some of the older men have seen 30 years of service. This service record covers only their public service affiliations, many of the men having records with other gas companies before coming to us.

Future Organization

We must realize that many of our old fellows are soon going to be enjoying the retirement that they have so faithfully earned. We must train men for these jobs. Where are we to get these men? I re-

fer now to such positions as general foremen, main foremen and inspectors.

We must keep in mind the progress of the business and realize that the new men must be in step with it. The work is more intricate, the appliances more complicated by automatic and controlling devices. House heating, that great, new, uncultivated field we are just entering, and at a very critical period in our history, brings us many new problems requiring new ideas, new and advanced methods, more knowledge and skill.

Better Class of Men Needed

My suggestion is that we get a higher type of men. Lose no chance to put on an ambitious high school boy who has not had the opportunity to get advanced education. Give him a chance and you will be surprised to note the readiness with which he grasps the problems. We have many instances where these fellows are making good. There is a feeling that they want "white collar jobs," but they are easily made to realize the advantages and opportunities in the gas business.

We need men. The educational requirement is becoming greater, knowledge is necessary, but in the distribution department practice is the real requirement, if we are going to uphold our reputation for supplying the essential and assured service.

There are some vital factors in the educating of our men extending beyond the scope of mere mechanical skill. These they learn to a great extent by observing the attitude of the men to whom they report.

Co-operation Between Departments

A very essential element is the spirit of close co-operation between all departments. Without this all other efforts leading to good service are only partially effective. Can you imagine the Princeton varsity crew skimming along on Carnegie Lake, each oar raised at the same instant, each stroke the same length, each man pulling his best? It is a fine example of co-operation. What would happen if one fellow tried to go in the opposite direction, or "did not care"? This might appear to be a far-fetched comparison, but the result of lack of co-operation in our business might have a more ridiculous aspect to a customer. We must all pull together and let the men understand this policy.

Courtesy is another factor that can be established by an atmosphere of due respect to all with whom we come in contact. I know of no better general rule than the old one based on the assumption that a competitor is ready and anxious to serve if we fail. We have no competitor, but our attitude to the customer must be just as obliging as though we had.

With these will come loyalty to the employer. We do everything we can to promote the personal interests of our men. We give them many opportunities for promotion, help them to save their money, give them the benefits of a liberal welfare system and group life insurance. In return we expect loyalty, and we get it.

Selling Gas Appliances

(Continued from page 354)

a cut line under it, and there's your advertisement. Maybe the picture with the cut line can sell some commodities, but I believe a gas appliance needs words in advertising to sell it. However, I believe that we should be wary of the use of too many words. Make each word count for something. Tell your story twice, three times, perhaps, but use distinct angles from which to tell it. Use short sentences with a punch in them.

To attract our customer who buys on "looks," we must have pleasing illustrations in our newspaper advertising—preferably creative illustrations, if space permits. We must intrigue her interest with the appearance of the appliance. We must bring forth the labor-saving advantages of gas as fuel. We must point out how easy to clean are gas appliances.

Service of the appliance is the argument we must use in our copy to attract the customers who buy on "how it cooks." By service I mean the actual performance of the appliance itself. This service is a positive one.

Better Cooking

We have spread columns of type upon the pages of newspapers telling the story of "easier" cooking, but we have said comparatively little about "better" cooking, and it's "better cooking" copy that will attract the woman who buys on the "how it cooks" principle.

Within the past twenty years there has been a great ado about pure foods. Up to that time we were buying oatmeal, prunes, rice, tea, anything that was dry in the grocery line out of an open bin. Today no one buys oatmeal out of a bin. We insist upon having it in a box, and tea must be in a tin, or securely wrapped in dirt-proof tinfoil. Now this didn't come about so much through the enforcement of the pure food law as it did through the cleverly directed propaganda spread broadcast by manufacturers of packaged foods.

In gas range advertising we have never emphasized strongly enough the importance of cooking. We have been remiss in pointing out the loss of food value, palatability and money that we suffer through poor cooking.

The ground under our feet is as firm as it is under the feet of the manufacturers of packaged foodstuffs. More firm, for the gas range oven of today, with its heat control, is the finest instrument for cooking, for producing nutritious, palatable foods, that the world has ever known.

Let us inject more of this into our newspaper advertising. Let us tell that customer who buys on "how it cooks" the facts.

The Price of the Range

Then we come to the third class—the customer who buys on price. What kind of copy, what kind

of illustration is needed to attract her to our advertising?

A nice big "$1.00 down" standing out on the bold black background of a reverse plate has a great appeal. Ease down those monthly payments, talk quality strongly and you have done all that you can do to attract the customer who buys on price.

If you can afford preferred position, on a feature page, one column six inches daily can be made to tell the story of your range, gas heaters or other appliances effectively.

Group advertising has much to commend it, however. One large group ad. twice a week should bring big returns.

Group Advertising

It is wise to establish a certain general atmosphere in group advertising that will identify your **company, though copy and illustration and layout must be changed constantly.** Try to work in brief editorials or chats with your customers. Tell little stories of your Home Service work that will run a thread of continuity throughout your advertising. Tell the latest news about house heating by gas. Make the tone of your group advertising intimate; invite the confidence of your public. This attitude is valuable, not only in creating immediate appliance sales, but in sowing seeds of faith in your company in the mind of the customer.

The reliability of the gas company as an authority on all matters pertaining to the use of gas or gas appliances should be driven home in every advertisement released by the gas company. Write into that copy every indication of friendliness—be as informal as the policy of your company will permit. Newspaper advertising is mass advertising, and newspaper advertising must be so written that the most simple will get your message—will be persuaded of your desire to help your customers. It must be so carefully edited that the most punctilious cannot find a loophole for criticism.

In order to be most effective advertising of gas appliances must have our united confidence behind it. Advertising is like a carrier pigeon. We must trust it when we send it out on its journey, we must greet it cordially when it reaches its destination, which in newspaper advertising means when the prospective customer comes into your store in response to the advertisement. For then is the duty of the advertisement ended and the duty of the salesman begun.

SECRETS OF SUCCESS IN SELLING SECURITIES

(Continued from page 356)

ten people in ten days and tell them a few brief points about the stock. You ask the average employee to go out and sell and he wilts. Ask him to go out and see ten people in ten days and tell them ten points about the stock and give him ten points and you have given him a definite, concrete job to do, something he is forced to admit he can do.

We did better with this plan, but we always found in every company a lot of willing workers who wanted to do their share but who just naturally couldn't talk—usually married men who were out of practice. So our next improvement was to have a little sales talk printed. Then if a man could not talk, at least he could carry around this sales talk, hand it out and stay while it was being read. That printed sales talk wiped out the last alibi. Armed with a supply of these talks, a dumb man can sell stock—and frequently does.

So this, in brief, is our plan—to give our men a job of work to do, to give them something they can do, then to see that they do it. At the meetings we hold it is an easy matter to get all of the employees to pledge themselves to see ten people in ten days.

Making the Employee Do the Job

Once each employee is pledged to see ten people we need machinery to make him do the job. We build it by requiring each employee to turn in ten prospects and then by setting up a system of reports and records to see that he calls on the ten people.

With a machine like this set up, and a general manager with some guts, the calls are made. If the calls are made, the stock is sold. The general manager must take the responsibility.

Now, naturally, you expect to pay employees whose calls result in sales. Everybody does this. Your fourth pitfall is to suppose that you can promote a thoroughly successful sale unless executives are paid over-riding commissions for the sales made by the men under them.

Compensation for Work Done

I can conceive that a lot of boards of directors would burst out crying at the bare idea of paying a general manager or a superintendent two bits a share on sales made by his employees. Just the same, it is one absolute requirement for getting a big job done in a big way. Take an extreme case. Suppose the man who makes the sale gets $2, his foreman 50 cents, his superintendent 25 cents, his general superintendent 20 cents and his general manager 15 cents. And suppose your advertising costs $1 a share and miscellaneous, say, 50 cents, your stock selling cost is only $4.60 a share. Try to get anybody else to sell your stock to your customers in five and ten-share lots for you at that cost. I never knew anybody to pay such liberal commissions as those I have mentioned. But if they did, in my judgment, their stock selling would cost them less instead of more.

That about sums up for employee campaigns. If you avoid the pitfalls enumerated, I don't know how you can possibly fail to sell a lot of stock at a fair price.

Three Major Pitfalls of Selling Through Full Time Salesmen

I know, however, of three major pitfalls—and I shall confine myself to those.

The first one is a duplicate of a pitfall of employee campaigns—the pitfall of supposing you can sell stock efficiently to your customers without adver-

tising. Advertising is nearly as necessary for full time selling as it is for employee campaigns. Use newspaper advertising if you can. If not, use direct by mail. But, in any event, use it freely. Spend at least $1 per share—I'm not sure that $2 per share will not save you money.

The second great pitfall is that of supposing that security salesmen can supervise themselves. When you have a small force of salesmen—not over ten—you assure supervision by getting your manager out with his men. Do not tolerate an office-chair manager. Fire him if he does not spend an average of 80 per cent of his time in the field with his men.

When your force gets over ten men, split it up, appoint your best salesman as field manager, let him take one team of half the men and let the manager take the other half. Then insist that both men call, not with the salesmen who are going strong, but with those who are in a slump.

Unless you can select, train and work salesmen a lot better than we can, I promise you you will always have enough faltering salesmen to keep your supervising force busy. As a rule ,have one supervisor to every seven to nine salesmen.

Selecting of Prospects

The third hole into which the unwary might stumble is the pitfall of thinking that you can count on your men to select their own prospects. When a man is selling bonds he develops a list of clients, usually rich men, who, on frequent occasions, have money to invest. As new issues come out the bond salesmen sell again and again to the same people.

Customer ownership salesmen cannot do this. They have just one issue to sell—probably your own preferred stock. When they have sold the rich man all he ought to carry, they can probably never sell him again. When they have sold the man not so rich all he can swing, he probably will not have any more investment money for a long time.

The result of the fact that your men can't everlastingly keep selling their old prospects is that you must furnish your men with new prospects, and the best new prospects are your customers. Run off your customer list and push them out to your salesmen. Make them report on their calls—and be sure they make enough.

I suppose I could add a couple of minor stumbling blocks—hiring good men and training men. But as I know nothing about the latter and less about the former, I shall not trouble you with my suspicions on the subjects.

About all I can say in conclusion is "Amen." I have tried to list for you the pitfalls to avoid. If you will avoid them and use just a little ordinary common sense, the securing of Customer Ownership is an easy matter.

The only excuse a company can have for not seeking customer ownership is that it needs neither capital nor friends.

If a company wants customer ownership its only excuse for not getting it is that it willfully and deliberately falls into the pitfalls that it can so easily avoid.

HALF CENTURY OF GAS PROGRESS RESULTS IN LOWER RATES

Manufactured gas today is being served to homes at from 25 to 50 per cent less than the rates charged 50 years ago, says Frank LeRoy Blanchard, chairman of the Publicity and Advertising Section of the American Gas Association.

Mr. Blanchard stated that this reduction was owing wholly to the economies and improvements introduced by a progressive gas industry, led by private initiative.

"If, during this critical period of development," Mr. Blanchard said, "the gas companies had been in the hands of municipal authorities and subject to political manipulation and incompetent management, the domestic customer today would not only be paying an excessive rate, but would also be poorly served.

"Managers of privately owned gas companies are continually studying how to improve their service in order to make it more attractive to their customers and thus increase their output and enlarge their income. These incentives carry little weight among the managers of municipal plants."

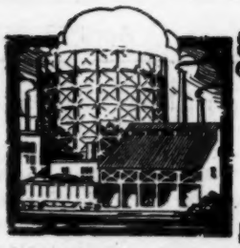
HEATING IS LOGICAL FIELD FOR GAS

It has been calculated that if the entire water power of the State of Idaho, in which there is a considerable surplus during winter months, were applied to heating, it would leave 30 per cent of the existing residences with no electric heat.

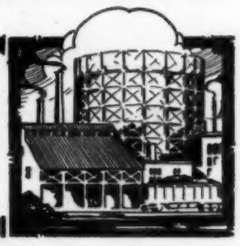
It was concluded, after a study of the city of Spokane, that to heat the town electrically would require 500,000 horse-power, while the city's entire demand for electricity for light and power is met by 27,000 horse-power capacity.

In view of these and similar investigations, gas men conclude that, so far as heating is concerned, it will be up to them rather than the generators of electricity to rid cities of smoke.

Solution of Utility Cross-Word Puzzle Published Last Week



NEWS OF THE GAS INDUSTRY



Iowa District Gas Association Holds 20th Annual Meeting

The following constituted the program at the 20th annual convention of the Iowa District Gas Association, held at Cedar Rapids, Iowa:

(Wednesday, April 22, 1925)

10 a. m.—Meeting of officers and council; meeting of nominating committee.

2 p. m.—Opening session: Reading minutes of 1924 meeting; report of council by secretary; election of new members; report of treasurer; report of finance committee; report of affiliation representatives; report of Legislative Committee, Frank T. Hanlon chairman; report of Fourth Meter Short Course Committee, C. R. Stahl chairman; report of Iowa Committee on Public Utility Information, Joe Carmichael director; report of Nominating Committee, Charles Smith chairman; election of officers and representatives; old business; new business; "The American Gas Association," A. Gordon King; president's address, H. J. Carson.

(Thursday, April 23)

10 a. m.—"Gas House Heating," Glenn C. Carnahan manager, house and water heating department, Peoples Gas Light & Coke Company, Chicago; First Aid Methods and Demonstration, Dr. E. R. Shannon, Waterloo, Iowa.

2 p. m.—Accounting Department Discussion, "Handling of High Bills and Collections," L. O. Gordon, general manager, Interstate Power Company, Albert Lea, Minn.; "Rate Structure and the Future of the Gas Industry," B. J. Denman, vice-president and general manager, The United Light & Power Company, Davenport, Ia.

6:30 p. m.—Banquet, Hotel Montrose, Dr. Harry M. Gage toastmaster. Address, J. P. Ryan.

(Friday, April 24)

10 a. m.—Discussion, "Progress in Gas Manufacture," Louis Stein, gas engineer, Northern States Power Company, Minneapolis, Minn.; Distribution Department Discussion: "Types of Station Meters for High Pressure Gas Distribution Systems"; "Factors Causing Higher Percentage Unaccounted for Gas in High Pressure Distribution Systems," Charles Smith, manager, Yankton Light & Heating Company, Yankton, S. D.

2 p. m.—"Water Heaters for the Average Home," H. R. Stephenson, sales manager, Sioux City Gas & Electric Co., Sioux City, Ia.; Sales Department Discussion, "Where Sales Charges on Customer's Installation Begin," H. L. Green, sales manager, Citizens Gas & Electric Co., Waterloo, Ia.; Discussion, "Merchandising, Periodic Sales Concentration, Advertising," C. A. Nash, sales manager, The United Light & Power Company, Davenport, Ia.; Open Forum; Question Box.

"Own Your Home" Movement in New York

The bare cavern of the 69th Regiment Armory was transformed into a panorama of sweeping meadows, country roads and alluring suburban scenes, and visitors walked in a fairyland of rose-covered cottages, colorful old-fashioned gardens and beautiful room interiors. This setting, designed to convince the public that home and home life is attractive, was the background for hundreds of educational exhibits on the many phases of home buying and building.

Expert advice, definite costs and educational displays on financing methods, community and city planning architecture, real estate and contracting, building materials, heating and ventilating systems, plumbing equipment, gas and electrical appliances and labor saving devices, furniture, wall paper and decorations, landscape gardening and hundreds of other items, were assembled under the supervision of prominent professionals and trade committees.

New Tax Rate Adopted by Atlanta

Atlanta, Ga. — Manufacturers are more than pleased with the action taken by the tax committee of the City Council in recommending unanimously the re-establishment of the basis for taxation of merchants and manufacturers and a reduction of 17.5 per cent in the basis of assessment for taxes.

The present method of arriving at the basis for taxation in Atlanta is to ask merchants and manufacturers to make a return to the tax collector's office showing the valuation of their property. The tax assessors then discount this value 25 per cent and fix the assessment at 70 per cent of this discounted value of 75 per cent, giving an ultimate basis for taxation of 52.5 per cent.

C. W. Ross Joins Bartlett & Snow Company

C. W. Ross, formerly with the Beaumont Company, is now manager of the Philadelphia office of the C. O. Bartlett & Snow Company, designers and builders of material handling and processing equipment, Cleveland, O. The Philadelphia office is located at 807 Schaff building.

Col. Hayward in N. Y. Gas Cases

Albany, N. Y.—Col. William Hayward, formerly U. S. District Attorney for the Southern District of New York, has been appointed chief counsel in the New York City gas rate cases by Attorney-General Albert Ottinger.

Col. Hayward will serve without compensation.

Southwestern Gas Association Convention Program

(Tuesday Afternoon, May 5)

Presiding—G. W. Fry, president. Harold E. Borton, first vice-president; W. E. Wood, second vice-president; F. C. Armbruster, third vice-president.

Singing, "America."

Invocation, the Rev. Wm. States Jacobs, minister of First Presbyterian Church, Houston.

Address of welcome, Hon. Oscar F. Holcombe, Mayor of Houston. Response, Judge Clarence Wharton, Houston.

Address of the president, G. W. Fry, Abilene, president West Texas Utilities Co..

Committee on president's address, appointed by vice-president.

Committee on resolutions, appointed by the president.

Nominating committee, to be elected.

Interlude.

"Advertising and Good Will," Herbert Metz, New York, advertising manager Western Electric Co.

"Fundamentals of Good Will Building," Keith Clevenger, Bartlesville, Okla., director of public relations, Bartlesville, Okla.

Discussion.

Announcements, E. N. Willis, secretary Southwestern Public Service Association.

(Wednesday Morning, May 6)

"Public Relations—When, Why, What?" G. W. Fry, Abilene, president West Texas Utilities Co.

"Continuing Relations with Customer Owners," S. J. Ballinger, San Antonio, commercial department, San Antonio Public Service Co.

Discussion.

"The Future of National Electric Service," Gen. Guy E. Tripp, New York, chairman board, Westinghouse Electric & Manufacturing Co.

"Electric Railways—a Growing Necessity," J. N. Shannahan, Hampton, Va., president American Electric Railway Association.

Interlude.

"Our Servant—Gas," H. C. Abell, New York, president American Gas Association.

"Our Activities in Texas," W. B. Tuttle, San Antonio, chairman public relations committee, Southwestern Public Service Association, president San Antonio Public Service Co.

"Our Activities in Louisiana," L. S. Wescoat, Shreveport, president Louisiana Utilities Association, vice-president Southwestern Gas & Electric Co.

Discussion.

(Friday Afternoon, May 8)

"The Speakers' Bureau," Geo. McQuaid, Dallas, director Texas Public Service Information Bureau.

"The Speakers' Bureau," H. M. Blain, New Orleans, director Louisiana-Mississippi Public Utility Information Committee.

Discussion.

"We Hereby Resolve," report of Committee on Resolutions.

"More Electric Service," Harold E. Borton, Dallas, chairman Electric Service Section, Southwestern Public Service Association, Texas Power & Light Co.

"More Mass Transportation," W. E. Wood, Houston, chairman Railway Section, Southwestern Public Service Association, manager Houston Electric Co.

"Gas but Not Gassing," F. C. Armbruster, Shreveport, chairman Gas Section, Southwestern Public Service Association, superintendent gas, Southwestern Gas & Electric Company.

"Making the Ledger Talk," E. C. Jolly, San Antonio, chairman Accounting Division, Southwestern Public Service Association; auditor San Antonio Public Service Co.

"We Sell 'Em," Hartwell Jalonick, Dallas, chairman Manufacturers and Suppliers Section, Southwestern Public Service Association; Jalonick Appliance Co.

"Association Sidelights," G. W. Fry, Abilene, president and chairman executive committee, Southwestern Public Service Association; president Western Texas Utilities Co.

"A Vanishing Race," C. P. Dodson, Decatur, chairman Membership Committee, Southwestern Public Service Association; district manager Texas Power & Light Co.

"The Work of the Association Office," E. N. Willis, Dallas, secretary Southwestern Public Service Association; F. J. Gannon, Fort Worth, treasurer Southwestern Public Service Association, assistant treasurer Northern Texas Traction Co.; A. F. DeLoach, Galveston, chairman finance committee, Southwestern Public Service Association, auditor Brush Electric Co.

"The President's Address," report of the committee.

"In Memoriam," P. K. Baker, Dallas, chairman Committee on Memorials, Southwestern Public Service Association; vice-president Southwestern Bell Telephone Co.

Other committee reports.

Unfinished business.

Election of officers, executive committee, advisory committee, finance committee and member representative on executive committee, Southwestern Geographic Division, N. E. L. A.

Installation of president-elect.

Final adjournment.

Gas Section

(Wednesday Afternoon, May 6)

Presiding—H. E. Danner, chairman Commercial Committee.

"Good Will Advertising," J. E. White, Sherman, manager Municipal Gas Co.

Discussion, led by C. B. McKinney, Dallas, president Municipal Gas Co.; chairman of Publicity and Good Will Advertising Committee.

"Equitable Rates—Natural and Manufactured Gas," R. E. Naylor, Shreveport, manager New Business Department, Southwestern Gas & Electric Co.

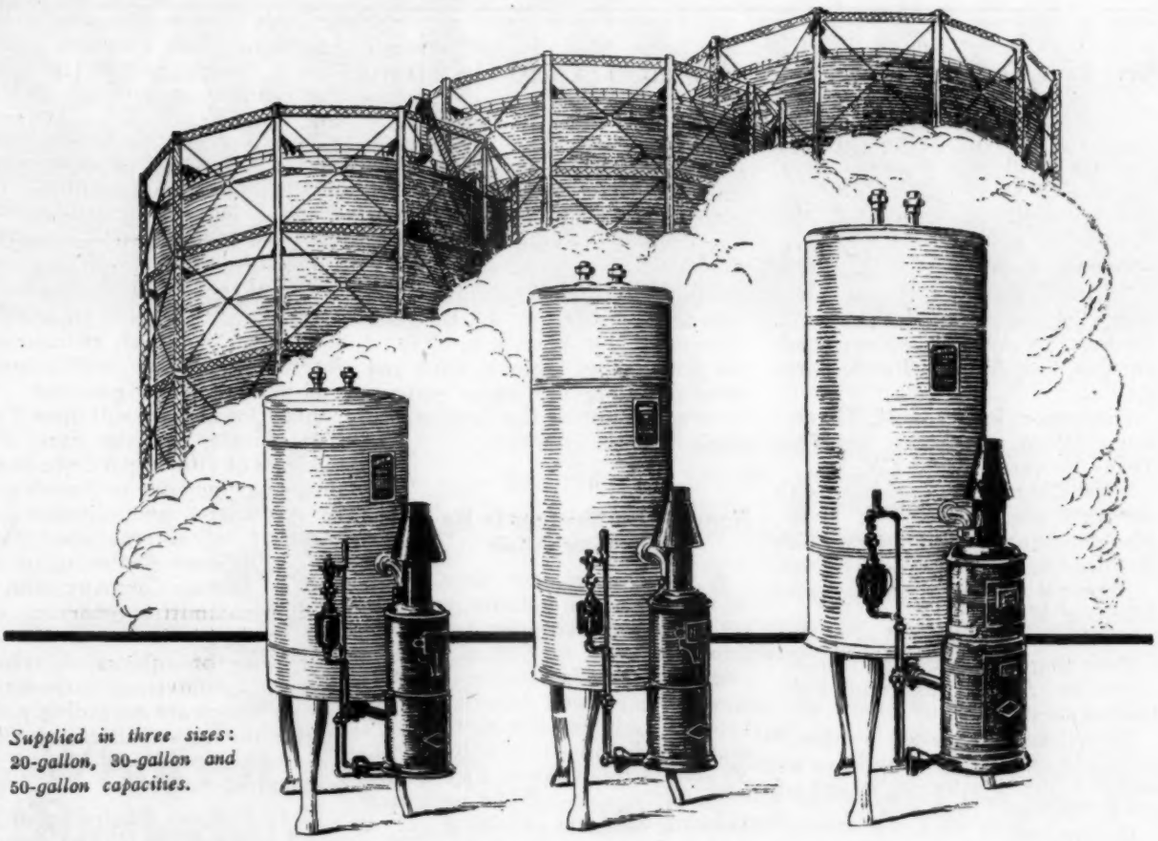
Discussion, led by W. B. Tuttle, San Antonio, president San Antonio Public Service Co.

"House Heating with Gas," R. M. Redding, Dallas, engineer, Dallas Gas Co.

Discussion, led by M. T. Walker, Beaumont, vice-president Southwestern Gas & Electric Co.

"Meter Records for Shops," J. T. McKay, New Orleans, assistant auditor New Orleans Public Service, Inc.

Discussion, led by W. D. Chalmers, Baton Rouge, assistant



Supplied in three sizes: 20-gallon, 30-gallon and 50-gallon capacities.

Natural Allies—

The Gas Industry and WELSBACH Automatic Storage Gas Water Heaters

FOR nearly forty years, the American Gas Industry has had a faithful lieutenant in the Welsbach Company. These long years of close association have bred a mutual confidence and respect rare in the annals of business enterprise. The Industry has learned to rely on the Welsbach Company, tried and proven on countless occasions.

Recent extension in the use of gas has only served to strengthen and solidify this long-standing alliance, based on common interests and a common goal—the progress of gas. Each new application of gas has found the Welsbach Company ready with appliances of proven efficiency with which to exploit it—appliances that gave gas a chance to do its best. In the steady, onward march of gas to new triumphs the Welsbach Company has always kept step in the front rank.

In line with this traditional spirit of co-operation, the Welsbach Company offers the American Gas Industry its line of Automatic Storage Water Heaters. Low in cost, correctly designed, faultless in workmanship and materials, and dressed up as if for parade in its natty jacket of brilliant grey enamel, it affords the logical means of cultivating a field rich in possibilities for gas—domestic automatic water heating, a stable, all-year-round outlet, the surface of which has hardly been scratched. It is a field, furthermore, in which for cleanliness, convenience and service, gas has no serious competition.

Let the prestige of the Welsbach name open the way for the more extensive use of gas for water heating in your territory.

Manufactured by **WELSBACH COMPANY,** *Gloucester City, N. J.*
Member American Gas Association

treasurer Baton Rouge Electric Co.

(Thursday Morning, May 7)

Presiding—F. C. Armbruster, chairman Technical Committee.

Election of chairman for ensuing year.

"Our Relations with the Gas Service in Houston," C. J. Kirk, Houston, Supervisor of Utilities.

"Proper Methods of Gas Main and Service Installation," W. Burke, San Antonio, superintendent gas, San Antonio Public Service Co.

Discussion, led by C. M. Thompson, Waco, assistant manager Texas Power & Light Co.

"Cost Data and Experiences with Ditching Machine," F. H. Shaw, Houston, engineer, Houston Gas & Fuel Co.

Practical Demonstration of Ditching Machine.

(Friday Morning, May 8)

Presiding—C. B. McKinney, chairman Advertising and Publicity Committee.

"Gas Standards and Services," compiled from information secured in the Southwest, report of F. A. McNess, chairman.

Discussion.

Report of C. H. Seidenglanz, Dallas, chairman Manufacturers Committee.

"Joints for C. I. Pipe," data prepared by W. F. Wright, Dallas, superintendent Dallas Gas Co.

Discussion.

Demonstration and Tests of Bell and Spigot Joints.

L. R. Dutton Leaves Utility Field for Banking Business

L. R. Dutton, division manager of the Philadelphia Suburban Gas & Electric Company, has resigned his present position to become first vice-president and treasurer of the Jenkintown Bank & Trust Company, as of May 1.

Mr. Dutton came to Jenkintown from West Chester, Pa., 26 years ago, being at that time manager of the Chester County Gas Company. His early days in Jenkintown were spent as constructing superintendent, building the gas plant of the Jenkintown & Cheltenham Gas Company, of which he afterward became president and manager, until it was sold to the American Gas Company in 1910. Since that time he has been division manager of the group of companies merged into the Philadelphia Suburban Gas & Electric Company.

In the utility field Mr. Dutton has been president of the Pennsylvania Gas Association, secretary and treasurer of the Eastern States Gas Conference and a director of the American Gas Association for six years. In banking circles he was an organizer of the Glenside National Bank, later a director of the Jenkintown National Bank and since the merger of these institutions a director of the Jenkintown Bank & Trust Company.

Natural Gas Meeting to Be Interesting Affair

A program of four days, filled to the brim with activity, and not all of it hard, cold business routine, has been completed for the annual convention of the Natural Gas Association of America, to be held, in conjunction with the Natural Gas Supply Men, May 18, 19, 20 and 21, at Atlantic City, N. J.

The designers of the program were successful in providing something of interest for every minute of the convention period, with the result that the gathering this year should prove to be the most interesting the association has ever held. Both technically and socially, the desires of those who attend the convention have been carefully considered. The convention opens Monday morning, May 18, with a meeting of the Technical and Research Committee, in the Traymore Hotel, which is right on the famous boardwalk of the popular seaside resort. This committee, of which H. C. Cooper is chairman, will hear reports from sub-committees on Gas Measurement, Utilization and Transportation. This will be one of the most important sessions of the convention, as the subjects to be reported upon will be recognized by the gas men as salient features of their business.

Natural Gas Supply Men Meeting

On Monday afternoon the Natural Gas Supply Men will hold their annual meeting on the Steel Pier. Monday evening the board of directors will meet at the Traymore Hotel to receive reports of the secretary-treasurer, William B. Way of Pittsburgh, of the chairman of the Technical and Research Committee, and to appoint the committees on Place of Meeting, Final Resolutions, Nominating Committee and to transact other business coming properly before it. The Supply Men will entertain Monday night with a typical seaside program. They have obtained the Hygeia Pool for the evening, where they will put on a series of swimming, diving and other aquatic contests in which swimmers of international fame will compete, and perhaps a few gas men. The convention proper will open Tuesday morning on the Steel Pier. Subjects of vital importance to men of the gas industry of America will be presented and discussed by speakers of international fame. Chief Engineer Kettering, of the General Motors Company, who has an international engineering reputation in the motor world, will speak on the subject of "Heat," and the fundamental purposes involved, which are exceedingly vital at this time, particularly to all of the companies selling natural gas for heating purposes.

P. G. Gossler, chairman of the board of directors of the Columbia Gas & Electric Company, will speak on a subject which for the present the committee in charge is keeping a deep-dyed secret, but which they claim will be of intense interest and of vital importance to all operators. Henry L. Doherty, widely known as the head of the Henry L. Doherty Company and the Cities Service Company, will talk on House Heating and the Industrial Gas Business, and their relations. This subject will cover many interesting phases of the gas business, particularly stressing how to hold business now possessed and how to build for the future.

In addition to all this, the committee is arranging to have a real practical operator discuss matters pertaining to drilling of wells and other subjects of interest to the industry. The annual banquet will be held on Wednesday evening at the Traymore Hotel and promises to be the most interesting affair of its kind the association has ever held. There will be speakers of national prominence and a program of entertainment unparalleled in national gatherings of the association.